No. 6

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of

The Canadian Phytopathological Society

SIXTH SESSION

July 13th to 15th, 1936

(UNIVERSITY OF NEW BRUNSWICK,
FREDERICTON, N. B.)

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EDITORIAL COMMITTEE

I. L. CONNERS

J. H. CRAIGIE T. C. VANTERPOOL

OTTAWA, CANADA
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COMMONWEALTH MYCOLOGICAL INSTITUTE
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THE CANADIAN PHYTOPATHOLOGICAL SOCIETY

LIST OF OFFICERS AND COUNCIL 1935-36

President

F. L. Drayton, Central Experimental Farm, Ottawa, Ont.

Vice-President

J. G. Coulson, Macdonald College, Que.

Secretary-Treasurer

I. L. Conners, Central Experimental Farm, Ottawa, Ont.

Councillors

J. H. Craigie, Dominion Rust Research Laboratory, Winnipeg, Man.
A. W. Henry, University of Alberta, Edmonton, Alta.

Minutes of the Sixth Annual Meeting Held at Fredericton, N.B., July 13th to 15th, 1936

BUSINESS SESSION

The business session which was scheduled for 2.00 p.m. July 13 was postponed until 9.00 a.m. July 14, on account of the small number of members present on the opening day.

The President, F. L. Drayton, called the meeting to order at 9.20 a.m. in a lecture room in the Forestry Building, University of New Brunswick. A cordial welcome was extended to Dr. R. J. Haskell and other plant pathologists from the United States. It was regretted that Dr. Donald Folsom was unable to attend on account of the sudden passing of Mrs. Folsom.

The Chairman appointed the following committees: Resolutions, J. G. Coulson and R. R. Hurst; Publicity, J. F. Hockey and Clara W. Fritz.

A synopsis of the minutes of the last annual meeting was read and the minutes were approved on the motion of J. F. Hockey, seconded by J. G. Coulson. The Secretary-Treasurer's Report and Financial Statement were then read. It was moved by H. T. Güssow, seconded by R. F. Suit and carried that the Report and Financial Statement be adopted.

The Report of the Committee on the Imperial Mycological Institute was read. Dr. Güssow in his discussion of the report noted that the close proximity of Canada to the United States resulted in Canadian plant pathologists receiving much assistance from the loan of books, cultures, exchange of information from our southern neighbor. This was as it should be, but he felt that we should aim to build up a good Canadian section at the Imperial Mycological Institute as suggested in the memoranda that have been distributed to the Society's members. He had hoped that Dr. G. R. Bisby might have been appointed to the Institute to serve as special liaison officer between Canada and the Institute. Constructive suggestions from the members on ways and means of increasing the usefulness of the Institute to the members would be greatly welcomed by him or the Committee. Adoption of the report was moved by H. T. Güssow, seconded by Clara W. Fritz, and carried.

At the recommendation of Council it was moved by H. T. Güssow, seconded by J. F. Hockey, and carried that a donation of $50.00 be paid from the funds of the Society to the C.S.T.A. to assist the latter in discharging its debt. This motion gives final effect to the motion passed at the last annual meeting which recommended that some action be taken in this matter.

It was moved by H. T. Güssow, seconded by J. G. Coulson that an honorarium of $15.00 be paid Miss Doris Connerty for stenographic services during the past year. The motion was carried.

The question of the tenure of Committees whose period of activity is more or less protracted was tabled at the last annual meeting. Since then Council has studied the matter further and reported that in its opinion the personnel should be scrutinized annually and proposed that the Committees for the year 1936-37 be composed of the following, the first named person being the Convenor.

(1) Editorial Committee: I. L. Conners, J. H. Craigie, and T. C. Vanterpool.

(2) Committee on the Imperial Mycological Institute: Irene Mounce, T. Johnson, and D. L. Bailey.

(3) Common Names Committee: I. L. Conners, J. G. Coulson, F. L. Godbout, A. W. Henry and H. N. Racicot.

It was moved by Clara W. Fritz and seconded by J. L. Howatt that the principles enunciated above be approved and that the personnel of Committees as submitted by Council be accepted. Carried.

Applications for membership from R. Bonde, H. J. Brodie, S. F. Clarkson and D. B. O. Savile were received and approved by Council. Moved by Clara Fritz, seconded by J. L. Howatt that the applicants be elected. Carried.

The President announced the death of J. C. Roger, a former member, and requested the members to rise while the Secretary read a biographical sketch of the late Mr. Roger.

JOHN CHARLES ROGER
1889 - 1935

It is with deep regret that we record the death on November 11, 1935, of John Charles Roger, Assistant Plant Pathologist at the Dominion Laboratory of Plant Pathology, Summerland, B.C. Mr. Roger was born in Ottawa and received his early education in that city. After spending several years in the Okanagan Valley where he was engaged in practical horticulture, he entered the Ontario Agriculture College in 1913, and in 1915 enlisted with the Canadian Field Artillery and saw service in France. He was invalided home and later continued his studies at Guelph. After his graduation in 1920 he joined the staff of the Soldier Settlement Board and was located at Penticton, B.C. In 1923, he was appointed Assistant District Horticulturist for Penticton in the Provincial Department of Agriculture. He entered the Federal Department of Agriculture in 1928 and became Assistant Plant Pathologist at the Summerland Laboratory.

Though of a very diffident and reserved nature, Mr. Roger carried on his work with a quiet enthusiasm and a clarity of purpose. To the growers, whom he served, and to his colleagues, with whom he worked, he gave wise council and was a true friend. His untimely death terminates a service to phytopathology which was greatly valued and which showed much promise.

It was moved by R. R. Hurst and seconded by H. T. Güssow that letters expressing the sympathy of the Society be sent to Mrs. J. C. Roger and Dr. Donald Folsom in their bereavement. Upon the completion of the Society's business the reading of papers was proceeded with.

Unfinished items of business were completed at a brief session beginning at 2.20 p.m. Wednesday. The Report of the Resolutions Committee was read by R. R. Hurst. Its adoption was moved by him, and seconded by J. G. Coulson. Carried.

J. F. Hockey reported that the Publicity Committee had prepared a brief résumé of the activities of the Society for the press. It was moved by J. F. Hockey, seconded by I. L. Conners that the Committee's report be adopted.

It was moved by J. F. Hockey, seconded by J. G. Coulson, and carried that a short abstract (ten lines) of each paper be submitted by the author to the

Secretary-Treasurer at the time when he submits the title. It was moved by J. F. Hockey, seconded by R. R. Hurst, and carried that abstracts of the papers, read at the annual meeting be mimeographed and distributed to the members soon after the annual meeting. This completed the business of the Society.

SCIENTIFIC SESSIONS

Three sessions, wholly, or in part, were devoted to the reading and discussion of papers. At one session the Society met jointly with the Soils Group of the C.S.T.A. The titles of papers read at these sessions are given elsewhere.

Miss Burnham gave a summary of the literature on the role of insects in the spread of viruses in which she emphasized the historical development of our present knowledge, and the relative importance of the different groups of insects, especially the aphids. Dr. Güssow commended the entrance of an entomologist into the field of plant pathology and stressed the importance of co-ordinated efforts between entomologists and plant pathologists. Mr. Crawford stated that a study was now being made of the aphids on potatoes in New Brunswick combined with a less intensive survey over the rest of Canada.

Dr. Drayton described the sexual behaviour of the species of *Sclerotinia*, which he has studied closely and which belong mostly to a group in which apothecia arise from a stroma, but sclerotia are also present. Dr. Haskell paid tribute to Dr. Drayton and Dr. Craigie for their contributions to pure science.

Mr. Conners described laboratory and field experiments with *Beauveria Bassiana* in which it was found that the Canadian isolate of the organism was highly pathogenic to the European corn borer. The fungus is being used in experiments in a naturally-infested area this year.

Mr. Howatt reported studies on a new apple rot, which has been found to be the most prevalent one present in common storage at the Experimental Station, Fredericton. The pathogen, *Gloeosporium allantoideum* Peck, was identified by Dr. Dearness and made the type species of a new genus, *Dasycarpoma*.

Mr. Hilborn, who described his work done under Dr. F. H. Steinmetz, traced the histological changes which occur in apple-tree wood as the result of winter injury. His findings help to elucidate some phases of the problem where grosser methods have failed.

Dr. Suit described the types of winter injury noted on apple trees at Macdonald College, their relation to varietal behaviour, and the success obtained in the treatment of injured trees.

Dr. Haskell gave a forceful paper on the plant pathologist's obligation to the public. He discussed the problem under four main heads. Firstly, there is the selection of a problem. Every investigator must have his programme of research. He must take time to select and outline carefully his problem, but every research man should leave his programme sufficiently flexible so that he can at any moment co-operate with the extension man when an emergency arises. Examples of successful co-operation were cited. In the second place, research workers should make the results of their investigations available in clear, pleasantly written accounts. Unless this is done the value of their work is mostly nullified. In the third place, results should be followed through. Research men should follow out their work to see whether their results have or have not been obtained in the larger field. In order to bridge the gap between the research pathologist

and the public more adequately, the extension pathologist has come into being. New York state was first, but now 20 states have extension pathologists. Three states have the duties of entomologist and plant pathologist combined. There are now 33 full or part-time extension pathologists. Every spring each extension pathologist makes a study of the problems that can be handled and usually selects 3 major and some minor problems. The pathologist works usually with the county agricultural agent. Demonstrations are of two forms: (1) result demonstration, (2) method demonstration. These demonstrations are supplemented by press releases, radio talks, bulletins, etc. Closer co-operation between research and extension men is vital. Recently, regional meetings between research and extension workers have met with much success. Committees formed to co-ordinate investigations such as the Seed Treatment and the Potato Improvement Committees of the American Phytopathological Society are doing valuable work.

The papers at the joint session centred chiefly around the importance of boron in the plant's economy. A spirited discussion arose particularly over its importance in preventing drought spot and corky core. A very strong plea was made that the Secretaries of various groups arrange joint sessions of the groups when topics of mutual interest are being given on different programmes.

Only a few members availed themselves of the opportunity to visit Aroostook Farm, Presque Isle, Me., on Thursday, July 16, as guests of the Departments of Agriculture of the State of Maine and of the Federal Government. The morning was spent in inspecting the greenhouse and experimental plots, where the work being conducted at the Station on potato breeding and on testing of hybrids for disease resistance was explained by Dr. C. F. Clark, Dr. E. S. Shultz, and their co-workers. Some excellent varieties possessing resistance to at least one of the major diseases have been produced in the last 13 years. These new varieties frequently form the parents for further crosses. In the afternoon a short tour was made through an important potato growing area in Aroostook County.

REPORT OF THE SECRETARY-TREASURER

Mr. President,—

I beg to submit, herewith, the report of the Secretary-Treasurer for the year ending May 31, 1936.

The fifth annual meeting of the Society was held at the University of Alberta, Edmonton, Alta., June 25 to 27, 1935. Three sessions were held, one devoted to business and two to the reading and discussion of papers. Thirteen papers were read, of which four have been published. The average attendance at the sessions was about fifteen.

Proceedings

Since the Edmonton meeting was held the Proceedings for 1933, 1934, and 1935 have been printed according to the plan there adopted.

The 1933 Proceedings consists of the Minutes, etc., and a reprint of the papers read at the Regina meeting and published in the Proceedings of the World's Grain Exhibition and Conference, Vol. 2.

The 1934 Proceedings contains only the Minutes, etc., and the titles of the papers read at Macdonald College, Que.

In addition to the Proceedings, the February, 1935 issue of "*Scientific Agriculture*" was sent to members of the Society, who are non-members of the

C.S.T.A. In this number appeared four papers read at Macdonald College and abstracts of seven others, while the other papers therein were contributions to plant pathology.

The 1935 Proceedings contains the Minutes, etc., the titles of papers read at Edmonton, and the titles of papers published by members of the Society from June 1, 1934 to May 31, 1935. At this meeting the Secretary-Treasurer was instructed to secure reprints of papers read at Edmonton and published in "*Scientific Agriculture*" or the "*Canadian Journal of Research*" and to send a questionnaire setting forth in detail the two proposals: (1) distribution of the reprints separately from time to time throughout the year; (2) retention of the reprints and binding them with the Proceedings at the end of the year, and the cost of the two schemes. Replies to the questionnaire were received from 41 members, of whom 39 favoured the first scheme.

Th publishing of the Proceedings took longer than expected and although protracted negotiations were conducted to secure reprints at a definite scale of prices, it was found necessary to place orders for reprints without advance information as to their cost. In order to speed up publication of Proceedings, etc., your Secretary would suggest that the Chairman of the Editorial Committee be empowered to do business directly with the Printers and to buy reprints of papers as required—those appearing in "*Scientific Agriculture*" to be purchased from Mr. Trueman of the C.S.T.A. and those from "*Canadian Journal of Research*" from Mr. Lathe of the National Research Council. (This suggestion has since been approved by Council). In another year your Secretary-Treasurer should be able to inform the Society how well the plan is working.

Election of Officers

Nomination ballots were sent out in May to be returned on or before May 31st. A total of 19 ballots was returned. As a result, the following members were nominated: J. G. Coulson, A. W. Henry, and H. R. McLarty for President; I. L. Conners, G. B. Sanford, and J. F. Hockey for Vice-President; T. Johnson, L. W. Koch, and R. C. Russell for Secretary-Treasurer; and G. H. Berkeley, J. W. Eastham, and D. J. MacLeod for Councillor. The electoral ballots were mailed June 6, to be returned on or before June 23. Fifty-three ballots were returned, resulting in the election of Prof. J. G. Coulson as President, Mr. I. L. Conners as Vice-President, Dr. L. W. Koch as Secretary-Treasurer, and Mr. J. W. Eastham as Councillor. Dr. Irene Mounce and Mr. G. A. Scott acted as scrutineers.

Membership

The membership has increased slightly in the past year. On May 31st there were 80 members, of whom 30 were in arrears for the current year and 4 had paid in advance. Including the Honorary members, the membership is now 84 as against 77 last year. During the current year 6 members were dropped and one was lost through death, while 8 paid up their back fees, 2 former members were reinstated and 4 new members were received. Possibly due to the scattered nature of the membership quite a number are slow in paying their fees. The members are urged to pay their fees more promptly, and the Society should also aim to maintain its membership.

Applications have been received from 3 persons for membership.

Finances

As shown by the attached financial statement, the total revenue for the current year was $113.51, while the total expenditure was $252.66, with a net balance of $688.83 at the end of the year.

The printing of the Proceedings has been the largest single item of which $163.66 was expended on the Proceedings for 1933 and 1934. If this amount is deducted from the expenses it will be seen that there has been a slight surplus on current operations. After the deduction of the proposed gift to the C.S.T.A. there will still be a balance of over $600.00, which is adequate for a Society of 100 members operating on the present basis.

The Sixth (Fredericton) Meeting

The President, in February, appointed Mr. D. J. MacLeod, Chairman of a local Committee, who has taken the responsibility of organizing the programme and integrating it with that of the C.S.T.A. in consultation with the Secretary-Treasurer.

Respectfully submitted,

I. L. Conners,
Secretary-Treasurer.

FINANCIAL STATEMENT

CASH ACCOUNT

1935-36

Revenue:			
Balance brought forward			$827.98
Fees: 1933, regular 6, student 1	$ 19.00		
1933, regular (in part)	2.00		
1934, 20	20.00		
1935, 43	43.00		
1936, 4 (1 applicant)	4.00		
Reinstated, 2	8.00		
		$ 96.00	
Sale of Proceedings	1.50		
Bank Interest	16.01		
		17.51	
			$113.51
			$941.49
Expenditure:			
Printing of 3rd Procedings and Reprints	$126.94		
Printing of 4th Proceedings	36.72		
Printing of 5th Proceedings	56.97		
		$220.63	
Stenographic Services (Honorarium)	10.00		
Exchange and tax	.50		
Postage	21.53		
		32.03	
			$252.66
Balance on hand, May 31, 1936			$688.83
Of the Balance:			
On deposit			$684.19
In petty cash			4.64

REPORT OF THE COMMITTEE OF THE IMPERIAL MYCOLOGICAL INSTITUTE

The Committee appointed to deal with matters in which the work of the Society is connected with that of the Institute, desires to report as follows:

In accordance with the wish expressed at the last meeting, and through the kindness of Dr. Güssow and Mr. Conners, a copy of Dr. E. J. Butler's "Memorandum on the work of the Imperial Mycological Institute, especially in its relation to Canada" has been sent to each member of the Society.

Your Committee has also been in touch with Dr. S. F. Ashby, the new Director of the Institute. He was kind enough to enlarge upon the suggestions, which were made by the committee under the Chairmanship of Dr. Fritz, as to ways in which the Society might render service to the Institute. A copy of his letter, as well, has been sent to each member.

May your committee urge a careful study of these memoranda, and draw attention especially (1) to Dr. Butler's Statement that we in Canada are not making full use of the Institute, their lending library, and their facilities for obtaining material for study and comparison, and for the identification of unknown organisms; (2) to Dr. Ashby's request for reprints *in duplicate* for the lending library of the Institute.

Irene Mounce, *Chairman.* D. L. Bailey
T. Johnson

REPORT OF THE RESOLUTIONS COMMITTEE

The Resolutions Committee present the following resolutions for the approval of the Society:—

1. The Canadian Phytopathological Society at this convention hereby expresses appreciation to the University of New Brunswick for the generous use of its buildings, campus and other facilities, as well as the hospitality accorded on this occasion.

2. The Society desires to express its indebtedness to Mr. D. J. MacLeod for his untiring efforts on behalf of the Society, which contributed so materially to the success of the 1936 convention.

3. The Canadian Phytopathological Society wishes to thank once more the Canadian Society of Technical Agriculturists for its assistance and co-operation in making our meeting a success.

4. The Canadian Phytopathological Society is interested to know that the Dominion Entomologist and officers of his Branch have initiated investigations concerning the role of insects in the spread of plant diseases and hope that it will be possible, as funds become available, to extend this programme.

J. G. Coulson, *Chairman.* R. R. Hurst

TITLES OF PAPERS READ BEFORE THE SOCIETY AT FREDERICTON, N.B., 1936

Morning Session, July 14

Burnham, Jean, C. Some insect carriers of plant diseases.

Drayton, F. L. Some sexuality studies in *Sclerotinia.*

Timonin, M., and I. L. Conners. The parasitism of the European corn borer by *Beauveria Bassiana.* Read by I. L. Conners.

Afternoon Session, July 14

Dearness, J., J. L. Howatt, and S. F. Clarkson. A new disease of apples caused by *Dasycarpoma allantoideum* (Peck) Dearness. Read by J. L. Howatt.

Steinmetz, F. H. The nature of winter injury in apple trees as shown by histologic studies. Read by M. T. Hilborn.

Suit R. F., and J. G. Coulson. The occurrence and the effects of and methods of treatment for certain types of winter injury of apple trees.

Haskell, R. J. The plant pathologist's obligation to the public.

Morning Session, July 15

(Joint Session with the Soils Groups of the C.S.T.A., in a Symposium on Soil Deficiency Diseases)

Davis, M. B. Minor elements as affecting horticultural crops. Read by H. Hill.

Wright, L. E. The role of elements other than nitrogen, phosphorus, and potassium in crop production. Read by A. W. J. Dyck.

Taylor, E. M., and J. L. Howatt. Magnesium in field production in New Brunswick.

Coulson, J. G., and L. C. Raymond. Studies on brown heart of swede turnips.

McLarty, H. R. Tree injection with boron and other salts as a control of drought spot and corky core of apples. Read by H. T. Güssow.

Unless otherwise indicated the paper was read by the author, or by the senior author for papers of joint authorship.

TITLES OF PAPERS PUBLISHED BY MEMBERS OF THE CANADIAN PHYTOPATHOLOGICAL SOCIETY

From June 1, 1935 to May 31, 1936.

Butler, E. J. The nature of immunity from disease in plants. Rapports IIIe Congrès International de Pathologie comparée. *1:* 2e Partie (Sect. de Path. vegetale: 1-15 (3-16 of the Reprint) 1936.

Conners, I. L. Canadian Plant Disease Survey Ann. Rept. *15* (1935): i-ix, 1-76. 1936 (mimeographed).

Crosier, W. and D. Reddick. Some ecologic relations of the potato and its chief fungous parasite, *Phytophthora infestans*. Amer. Potato Jour. *12:* 205-219. 1935.

Foex, Et. Emploi de la bouille bordelaise dans la lutte contre le *Phytophthora infestans*. (Le Cinquantenaire de la Bouillie Bordelaise) Supp. Rev. Path. Veg. *22:* 49-55. 1935.

———. Nouveaux essais expérimentaux sur le piétin des céréales au cours de la campagne 1934-1935. C. R. Acad. Agri. *21:* 1-4. 1935.

———. Etude expérimentale des piétins du blé au cours de la campagne 1934-1935. Ann. des Epi. et de Phyto. n.s. *2:* 1-11. 1936.

———, and Burgevin. Nouvelles notions sur l'action du bore sur la maladie du coeur de la betterave. C. R. Acad. Agri. *21:* 1-4. 1935.

———, and Lansade. L'action pathogene d'une forme de *Fusarium oxysporum* isolée de la pomme de terre. C. R. Acad. des Sc. *102:* 1812. 1936.

Folsom, D. Potato virus diseases in 1924. Amer. Potato Jour. *12:* 304-310. 1935.

———. Virus diseases of potatoes: Green Mountain seed plots. Apple scab control. *In* Summary report of progress, 1935, Maine Agr. Exp. Sta. Bul. 380: 162-164, 212-214. 1935.

———, and R. Bonde. List of distinct potato viruses. Amer. Potato Jour. *13:* 14-15. 1936.

Güssow, H. T. Plant quarantine legislation—a review and a reform. Phytopath. *26:* 465-482. 1936.

Hanna, W. F. Effect of vernalization on the incidence of loose smut in wheat. Sci. Agric. *16:* 404-407. 1936.

———, and W. Popp. Experiments on the control of cereal smuts by seed treatment. Sci. Agric. *15:* 745-752. 1935.

———, and ———. The production of smut-free seed. Dom. of Canada, Dept. of Agr. Circ. 94. 1936.

Henry, A. W. and J. B. Skaptason. Some results of seed treatment of grain crops. Univ. Alberta Leaflet 17. 1936.

Hildebrand, A. A., and L. W. Koch. A microscopical study of infection of the roots of strawberry and tobacco seedlings by micro-organisms in the soil. Can. Jour. Res. *14* (Sec. C): 11-26. 1936.

Johnson, T., and O. Johnson. Studies on the nature of disease resistance in cereals. III. The organic nitrogen content of mature and immature tissues of the wheat plant in relation to stem rust resistance. Can. Jour. Res. *13* (Sec. C): 355-357. 1935.

Jones, W. Control of downy mildew of hops in British Columbia. Proc. N. W. Assoc. H., E., and P. P. *1:* 5-6. 1935. (mimeographed).

Koch, L. W. Investigations on black knot of plums and cherries, IV. Studies in pathogenicity and pathological histology. Sci. Agric. *15:* 729-744. 1935.

———. Recent investigations on tobacco root rot in Canada. Can. Jour. Res. *13* (Sec. C): 174-186. 1935.

Ledingham, G. A. *Rhizophidium graminis* n.sp., a parasite of wheat roots. Can Jour. Res. *14* (Sec. C): 117-121. 1936.

Moss, E. H. The ecology of *Epilobium angustifolium* with particular reference to rings of periderm in the wood. Amer. Jour. Bot. *23:* 114-120. 1936.

Newton, Margaret, and T. Johnson. Stripe rust, *Puccinia glumarum*, in Canada. Can. Jour. Res. *14* (Sec. C): 89-108. 1936.

PETURSON, B. Physiologic specialization in *Puccinia coronata Avenae*. Sci. Agric. *15:* 806-810. 1935.

REDDICK, D. Seed transmission of potato virus diseases. Amer. Potato Jour. *13:* 118-124. 1936.

RICHARDSON, J. K. Control of late blight of celery. Sci. Agric. *16:* 358-364. 1936.

RUSSELL, R. C. Take-all—root-rot of cereal crops. Dom. of Can., Dept. of Agric. Circ. 93. 1936.

SIMMONDS, P. M., and H. W. MEAD. The examination of wheat seed to determine the disease factor. Sci. Agric. *16:* 175-179. 1935

——————, R. C. RUSSELL, and B. J. SALLANS. A comparison of different types of root rot of wheat by means of root excavation studies. Sci. Agric. *15:* 680-700. 1935.

TAYLOR, C. F. A method for the isolation of actinomycetes from scab lesions on potato tubers and beet roots. Phytopath. *26:* 387-388. 1936.

TUCKER, J. The Potato Association of America and the potato industry. Amer. Potato Jour. *13:* 1-3. 1936.

———————. Efforts to stabilize the potato industry in Canada. Amer. Potato Jour. *13:* 52-55. 1936.

TYNER, L. E., and G. B. SANFORD. On the production of sclerotia by *Rhizoctonia solani* Kühn. in pure culture. Sci. Agric. *16:* 197-207. 1935.

VANTERPOOL, T. C. Studies on browning root rot of cereals. III. Phosphorus—nitrogen relations of infested fields. IV. Effects of fertilizer amendments. V. Preliminary plant analysis. Can. Jour. Res. *13* (Sec. C): 220-250. 1935.

WILLISON, R. S. Peach canker investigations. II. Infection studies. Can. Jour. Res. *14* (Sec. C): 27-44. 1936.

——————, and G. C. CHAMBERLAIN. Studies in fruit diseases. VIII. Preventing peach canker. Dom. of Can., Dept. of Agric. Circ. 92. 1935.

YARWOOD, C. E. Heterothallism of sunflower powdery mildew. Science *82:* 417-418. 1935.

——————. The dirunal cycle of the powdery mildew *Erysiphe polygoni*. Jour. Agr. Res. *52:* 645-657. 1936.

——————. Host range and physiologic specialization of red clover powdery mildew *Erysiphe polygoni*. Jour. Agr. Res. *52:* 659-665. 1936.